

CLAIMS

1. A process for repairing a punctured pneumatic tire in a tire-rim assembly which comprises steps of;

mounting on a vehicle an assembly of a pneumatic tire and an approved rim provided with means for raising an internal pressure alarm, said pneumatic tire comprising a carcass of at least one ply toroidally extending from a pair of bead portions to a tread portion through a pair of sidewall portions, a belt of at least one belt layer arranged on an outer circumference of a crown portion of the carcass, and an auxiliary load-supporting structure satisfying a requirement that an deformation quantity of the tire in a radial direction thereof at a rim-assembled state under a load corresponding to 90% of a maximum load capacity at an internal tire pressure of zero is within a range of 30-60% of a section height of the tire under no load at the internal tire pressure of zero;

detecting a puncture of the tire produced during the running of the tire by the means for raising an internal pressure alarm;

unavoidably running the punctured tire to a relatively short-range safe place to quickly stop the vehicle; and

refilling gas inside the tire, which is emitted due to the puncture, to a given internal pressure by a gas filling means equipped on the vehicle while occluding a punctured hole with a puncture repairing means equipped on the vehicle.

2. A process for repairing a punctured pneumatic tire in a tire-rim assembly according to claim 1, wherein the deformation quantity of the tire is within a range of 35-50%.

3. A process for repairing a punctured pneumatic tire in a tire-rim assembly according to claim 1 or 2, wherein the auxiliary load-supporting structure is constructed so as not to at least contact inner surface parts located at the same sidewall portion with each other even in the unavoidable running at the puncture state.

4. A process for repairing a punctured pneumatic tire in a tire-rim assembly according to claim 1, 2 or 3, wherein the auxiliary load-supporting structure is a thin-walled rubber reinforcing layer arranged between the plies of the carcass or at an inner surface side of the carcass and at least over a full region of the sidewall portion.

5. A process for repairing a punctured pneumatic tire in a tire-rim assembly according to any one of claims 1 to 4, wherein the tire has an aspect ratio of 30-55%.

6. A process for repairing a punctured pneumatic tire in a tire-rim assembly according to any one of claims 1 to 5, wherein the deformation quantity of the tire to be mounted on a front wheel of the vehicle is 35-45%.

7. A process for repairing a punctured pneumatic tire in a tire-rim assembly according to any one of claims 1 to 5, wherein the deformation quantity of the tire to be mounted on a rear wheel of the vehicle is 40-50%.

8. A system for repairing a punctured pneumatic tire in a tire-rim assembly pneumatic tire mounted on a vehicle comprising;

an assembly of a pneumatic tire and an approved rim, said pneumatic tire comprising a carcass of at least one ply toroidally extending from a pair of bead portions to a tread portion through a pair of sidewall portions, a belt of at least one belt layer arranged on an outer circumference of a crown portion of the carcass, and an auxiliary load-supporting structure satisfying a requirement that an deformation quantity of the tire in a radial direction thereof at a rim-assembled state under a load corresponding to 90% of a maximum load capacity at an internal tire pressure of zero is within a range of 30-60% of a section height of the tire under no load at the internal tire pressure of zero;

means provided on the tire-rim assembly for detecting a puncture of the tire during the running and raising an internal pressure alarm;

a puncture repairing means equipped on the vehicle for occluding a puncture hole of the tire; and

a gas filling means provided on the vehicle for refilling gas inside the tire, which is emitted due to the puncture, to a given internal pressure.